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31 MAR 1970

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MEMORANDUM FOR: Director, National Photographic Interpretation Center

SUBJECT : Request for Approval of a Contract with [redacted]
[redacted] for the Design of Low Power Objective
Lenses at a Cost of [redacted] from FY-1970 R&D Funds

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1. This memorandum requests approval for the commitment of R&D funds for a contract. The specific request is stated in Paragraph 6.

2. The Advanced Stereo Rhomboid, presently under development by [redacted] includes three pairs of objectives which provide rhomboid magnifications of 1X, 2X, and 3X. When combined with a Zoom 240 Stereoscope equipped with 10X eyepieces, the system magnification ranges from 7X to 90X, and the field of view ranges from 28mm to 2.2mm. Future acquisition systems will produce imagery with a much larger scale than present systems. During the exploitation of these systems, it becomes very useful to resort to lower magnifications in order to gain the attendant larger fields of view. Also, the current characteristics of the imagery from manned aircraft makes the larger field of view obtained with a $\frac{1}{2}$ X objective lens highly useful for scanning this type of imagery. At the same time, a $\frac{1}{2}$ X objective lens would be utilized for scanning of the [redacted] imagery. Detailed analysis of this imagery would be performed with the presently designed 1X, 2X, and 3X objective lenses. The $\frac{1}{2}$ X and $\frac{1}{4}$ X objective lenses, with an associated Zoom 240 Stereoscope equipped with 10X eyepieces, would provide magnifications down to 1.75X and a field of view up to 112mm. IEG has formally requested that TSSG initiate a program to develop both the $\frac{1}{2}$ X and $\frac{1}{4}$ X objective lenses. This project is in direct response to that request.

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3. The proposed project will study the feasibility of developing prototype $\frac{1}{2}$ X and $\frac{1}{4}$ X objective lenses for the Advanced Stereo Rhomboid. A preliminary study has been made of one possible configuration that can be used in the development of these lenses. Enough analysis has been completed to indicate that the approach appears practical and that the lenses would have the same eyepoint and working distance as the present 1X, 2X, and 3X objective lenses. This project would make preliminary system studies of a number of possible configurations and would, assuming a feasible solution is found, pursue the most promising configuration to complete the preliminary optical design. Monthly

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GROUP 1
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SUBJECT: Request for Approval of a Contract with [redacted] 25X1
[redacted] for the Design of Low Power Objective Lenses at a 25X1
Cost of [redacted] from FY-1970 R&D Funds 25X1

progress reports will be submitted, and a final report will include the preliminary design data and describe the recommended system. Cost estimates to complete the design and to fabricate the prototype lenses will be submitted at the completion of the preliminary design study. The risk involved in designing the $\frac{1}{2}X$ objective lenses is considered to be average. The risk in designing the $\frac{1}{4}X$ objective lenses is considered to be somewhat greater. The contract would be completed within sixteen weeks after authorization to proceed.

4. [redacted] has submitted a proposal for the 25X1
performance of this work, which is considered satisfactory by the
Research and Engineering Division. [redacted] as produced the 25X1
associated Advanced Stereo Rhomboid with 1X, 2X, and 3X objective lenses.
Because of the interface requirement, no other company is judged to be
capable of satisfactory performance on this contract. Cost of the pro- 25X1
gram would be [redacted]

5. Successful completion of this contract could lead to a follow-on contract for developing prototype $\frac{1}{4}X$ and $\frac{1}{2}X$ objective lenses. Cost of the follow-on contract to develop prototypes is unknown since those costs are predicated on the results of this first study. Present indications are that future procurement of production units of these instruments would be for quantities on the order of 150 pairs of $\frac{1}{2}X$ and 50 pairs of $\frac{1}{4}X$ objective lenses.

6. It is requested that approval be granted to negotiate with 25X1
[redacted] for a contract to conduct the program 25X1
described at a cost not to exceed [redacted]

Chief, Technical Services & Support Group, NPIC

Attachments:

1. Proposal
2. Form 2420 [redacted]

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15 APR 1970

APPROVED:

ARTHUR C. LUNDAHL

Date

Director

National Photographic Interpretation Center

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